middle (zero) position. Adjust the volume of the audio system so that the sound meter reads 0 dB. That sets a reference point to measure the other octaves against, so don't alter the volume level for the rest of the procedure. Lower the center fader back down.

Now take the lowest fader and raise it up until the sound meter reads 0 dB. Write down its position on a piece of paper and lower the fader back down. Perform this procedure with all the remaining faders, writing down the position of each that produced a reading of 0 dB. When finished, set each fader to the position you recorded and you're done. Remember, due to the interaction between the sections of the equalizer, the quality of your results will depend on the quality of your equalizer.

However, Mr. McVay's circuit can be used to set an equalizer without a pinking filter. First send the white-noise generator's output into one channel of a graphic equalizer. Then set the lowest fader to its maximum-output position. Now adjust all successive faders so that each one is 3 dB lower than the one preceding it. Do the same with the other channel and you're done.

—*Steven Weiss, Sunrise FL*

You got me! It is obvious that I got my noises confused, so you're quite right. (I guess I was the only one making noise that month!) Thanks for the tips for using both white and pink noise.

NOTHING BOX

I built this circuit (see Fig. 8) so that I could watch my music as well as hear it. It's nothing more than a toy and has no practical value that I can find. It uses very ordinary parts, and for a power supply I used a three-volt battery pack, which is more practical than using household electricity.

Transistors Q1 and Q2 are configured (as a Darlington) to amplify the signal coming in from the speaker terminals. The signal from the Darlington amplifier is fed through resistor ladder, with the resistor junctions feeding the base terminals of ten NPN transistors. Once turned on, the transistors will light the LED's. As the signal from the speaker increases, the LED's light in sequence. I used a bargraph unit for the LED's. At very loud musical passages, all the circuit's LED's light up.

As I said, there isn't a practical value for this unit, but the aesthetics more than make up for it.

—*David Litke, St. Catherines, Ontario, Canada*

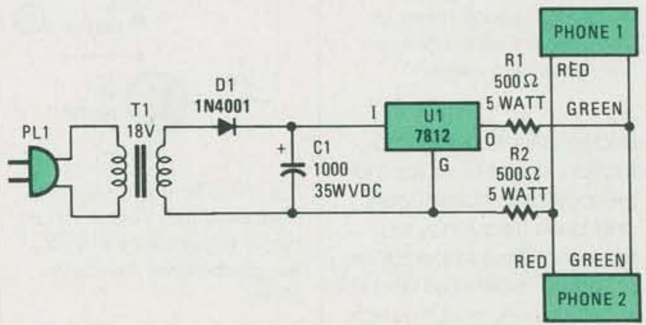

Fig. 7. The telephone intercom has two resistors in it to balance the circuit. This seems unnecessary, but it is a technique used by phone companies to reduce cross-talk.

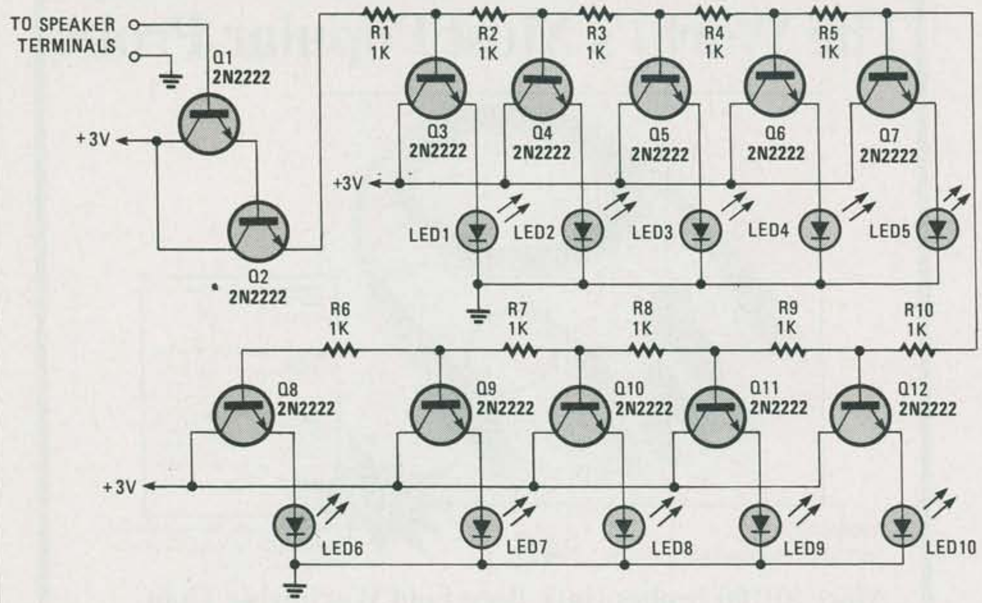

Fig. 8. This circuit is typical of what can be accomplished using a resistor network and several transistors. The circuit is essentially a transistor-based light organ.

Dave, I'm certain that people visiting you are impressed by what you've done, so, you see, there is a practical use for your circuit after all.

RINGER APPLICATION

The ringer on my phone was so low that I could hardly hear it. I checked with GTE and learned that the maximum "Ringer Equivalency Number" (REN) was five. I added the REN's of all my phones and found that was the seat of my problem.

I could have replaced all the ringer bells with electronic ringers to solve the problem, or I could have used a single bell in a central area where it could be heard. The best place was the hallway where the front and back door chimes were located.

I adapted a circuit (see Fig. 9) from a Motorola book, using one of three available IC's, each requiring a different capacitor for the level of tone required. The MC34017-1 provides a 1.0 kHz tone when C1 is 1000 pF. The MC34017-2 provides 2.0 kHz with a C1 value of 500 pF. The MC34017-3 offers a 500 Hz tone with a C1 value of 2000 pF.

The important features are that you can completely replace the telephone bell circuit using a minimum number of components. Each IC version offers on-chip diode

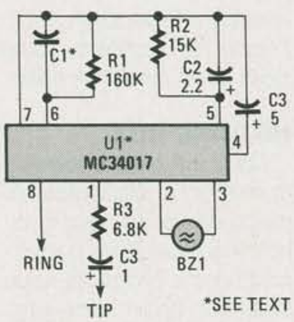

Fig. 9. The remote ringer is built around a single integrated circuit, the MC34017, which comes in three flavors with differing tone-frequency outputs.

bridge and transient protection, direct drive for the piezoelectric transducers, and base frequency options; the input impedance signature meets Bell and EIA requirements, and it rejects rotary-dial transients. That solved my problem and I hope that it will solve similar problems for some other readers.

—*Lloyd F. Thomas, Oxnard, CA*

You know, Lloyd, a lot of our readers have had to put up with that sort of thing, and now, thanks to your contribution they won't have to anymore! Good going.

WATER DETECTOR

They say that necessity is the mother of invention. This circuit was designed to monitor our basement for floods. Occasionally our washing machine or sink would overflow and if ev-

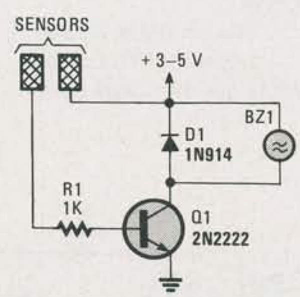

Fig. 10. The Water Detector is an extremely simple circuit that is triggered by bridging the gap between its sensor plates.

erybody was upstairs, the water could damage many of our valuable possessions.

This circuit (which is shown in Fig. 10) is really quite simple and it is also easy to assemble.

You won't have to etch PC boards, or even use perfboard. Simple, point-to-point wiring is sufficient. I soldered my wiring directly to the transistor leads. Here's how the water detector works: When the sensors are dry, transistor Q1 does not receive power, and so the buzzer (BZ1) is not activated.

When water bridges the sensors, power is applied to the base of transistor Q1 allowing current to flow to BZ1, turning it on. The sensors are nothing more than pieces of foil tape with wires soldered to them. You could even use nails or just plain wire. For best results, I found that the sensors should be placed about ⅛-inch apart.

Incidently, this is my first effort at circuit design! I learned electronics by watching electronic shows and reading magazines. I enjoy the hobby and hope to be able to major in electronics when I get to college.

—*Tony Rossi, Lititz, PA*

Readers, Tony is 15 years old, and I think you'll agree that his first effort is worthy of encouragement. Hope you enjoy your Think Tank book, Tony!

Well that wraps up things for another month. Don't forget, your contributions are an important part of this column, so keep those circuits and comments coming! ■

"I never fired a shot. . . the robot decoy just went wild."